REMARKS

Claims 2 and 4-18 are pending. Claims 2, 4-7, 11-14, and 18 are rejected. Claims 8-10 and 15-17 are indicated allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant thanks the Examiner for indicating these allowable claims.

Claims 5 and 12 are amended.

CLAIM REJECTIONS

Rejection under 35 U.S.C. 103(a) as being unpatentable over US Pat. No. 6,236,630 ("Kubo") in view of admitted prior art

Responsive to the rejection of claims 2, 4-7, 11, 12-14, and 18 as being unpatentable over Kubo in view of admitted prior art of FIG. 1, applicant has amended independent claims 5 and 12, and submits that amended claims 5 and 12, and their respective dependent claims, are patentable over Kubo and the admitted prior art for the reasons discussed below.

Briefly, the present application discloses a disc speed control device having two loops: an inner loop and an outer loop. See page 5, lines 20-21. The outer loop, which includes the speed processing means 8 and signal processing means 10, is a control loop and provides a determined rotation speed value to the inner loop, which includes the speed servo 3, the frequency generating means 2, and the disc actuation means 1. See page 5, lines 20-26, and FIG. 2.

The arrangement of the inner loop is the same as the prior art arrangement shown in FIG. 1, where a comparator 5 compares the input determined rotational

speed value provided by the outer loop with the actual rotational speed from the frequency generating means 2, and provides a control signal to adjust disc rotational speed through a regulating means 6 and an amplifier 7. See FIG. 1, and page 4, lines 5-29.

The inner and outer loops are used in both CAV and CLV modes, so that separate circuits for CAV and CLV are avoided. See page 3, lines 4-5. When in CAV mode, the speed processing means 8 simply provides a constant rotational (angular) speed as the determined rotation speed value regardless of the value of the input data frequency signal sent from the signal processing means 10. In the CLV mode, the speed processing means 8 must consider the data frequency signal from the signal processing means 10. See page 4, line 39-page 5, line 2. Specifically, the speed processing means 8 receives the input data frequency signal and computes the determined rotational (angular) speed based on the location of the disc. See FIG. 3, and page 5, lines 2-7.

Thus, in both modes, a desired rotational speed is generated in the outer loop and fed to the inner loop, so that the inner loop using a conventional CAV servo shown in FIG. 1, which compares the actual rotational speed and the desired rotational speed to control the disc, can be shared in both the CAV and CLV modes.

Amended claim 5 recites the above features. Specifically, amended claim 5 recites a disc speed control device for use in a player or recorder of a disc shaped information carrier to read or record data along data tracks, the data being read or recorded using a pick-up, the device comprising:

> *disc actuating means for rotating the disc in a first mode at a constant linear velocity or a second mode at a constant angular velocity;*
>
> *the pick-up for reading the data from the rotating disc and producing an output signal representative of scanned data from the rotating disc;*
>
> *frequency generating means for generating a rotation speed frequency representative of a rotation speed of the rotating disc;*
>
> *signal processing means for processing the output signal of the pick-up and creating a data frequency signal, the data frequency signal being related to a frequency at which the data is scanned by the pick-up;*
>
> *a speed processing means for receiving the data frequency signal and computing a determined rotation speed value for said first mode and said second mode wherein in the first mode the determined rotation speed value further depends on a location of the rotating disc at which the pick-up scans the data; and*
>
> *speed servo means including a speed comparator used in both the first and second modes for receiving and comparing the rotation speed frequency signal and the determined rotation speed value and for regulating the disc actuating means in response to the determined rotation speed value.* (Emphasis added)

In amended claim 5, the speed servo means (including a speed comparator used in both the first and second modes) is part of the inner loop. The outer loop includes the speed processing means for receiving data frequency signal and computing the determined rotation speed value for both first and second modes. In the first mode, the determined rotation speed value further depends on a location of the rotating disc at which the pick-up scans the data. An example of the first mode is the CLV mode.

Applicant submits that Kubo does not disclose or suggest the two-loop structure as recited in amended claim 5, and does not disclose or suggest a disc speed control, device including speed servo means including a speed comparator used in both the first and second modes for receiving and comparing the rotation speed frequency signal and the determined rotation speed value and for regulating the disc actuating

means in response to the determined rotation speed value, and speed processing means for computing the determined rotation speed value in the CLV mode depending on a location of the rotating disc at which the pick-up scans the data, as recited in amended claim 5.

Applicant disagrees that the combination (the motor servo and driver 8 shown in FIG. 1) of elements 8a, 8b, 89, 93, and 95 in FIG. 3 of Kubo should be interpreted as the speed processing means. First, this combination does not provide a determined rotation (angular) speed, as alleged, to be fed into a speed servo means including a speed comparator used in both the CAV and CLV modes for receiving and comparing the rotation speed frequency signal and the determined rotation speed value and for regulating the disc actuating means in response to the determined rotation speed value, as recited in amended claim 5.

In fact, the desired rotation speed is an input to the motor servo and driver 8, not an output. The system controller 14, actually, is one that generates the desired rotation speed. For example, Kubo, at col. 8, lines 34-37 states the following: "The speed data sent from system controller 14 . . . over the bus 71 indicates one of the several predetermined speeds at which the disk 4 is to be driven by the motor 5." FIG. 4 shows that the system supports at least three predetermined rotational speeds: 6000 rpm, 5500 rpm, and 5000 rpm. For a second example, Kubo, at col. 9, lines 39-43, states that the CAV servo 8b includes a reference voltage generator 87 having its input connected to speed data bus 71 for putting out a reference voltage corresponding to the speed specified by the system controller 14. As such, the motor servo and driver 8

(relied upon as the speed processing means) does not compute a determined rotation speed value as recited in amended claim 5.

Furthermore, the motor servo and driver 8 actually is a servo that receives and compares the current rotation speed from input lead 74 and the desired rotation speed provided by the system controller 14 via the speed data bus 71 to regulate the disc actuating means 5. See col. 9, lines 33-45.

Thus, it appears that it is more appropriate to interpret the system controller 14 as the speed processing means, and the servo and driver 8 as the speed servo means, as recited in amended claim 5. However, even with this interpretation, Kubo still does not yield amended claim 5, because Kubo does not disclose or suggest that the servo and driver 8 (relied upon as the speed servo means in this interpretation) includes a speed comparator used in both first and second modes for receiving and comparing the rotation speed frequency signal and the determined rotation speed value and for regulating the disc actuating means in response to the determined rotation speed value, as admitted in the Office Action.

The servo and driver 8 actually includes two servo circuits: a CLV servo circuit 8a and a CAV servo circuit 8b. See FIG. 3, and col. 9, line 66-col. 10, line 2. The CAV servo circuit 8b receives via a line 74 pulses representing the actual rotational speed of the disc from a motor speed sensor 73, and the desired rotational speed via the speed data bus 71 from the system controller 14. See FIG. 3, col. 8, lines 57-59, and col. 9, lines 35-43. Both the pulses and the desired rotational speed are converted to separate voltage signals, which are fed to a differential amplifier 88 for providing a

voltage proportional to the difference between the converted voltage signals. See FIG. 3, and col. 9, lines 43-45.

The CLV servo 8a accepts read clock pulses (relied upon as the data frequency signal) via line 68, the desired minimum rotational speed via the speed data bus 71 from the system controller 14, true clock pulses via a line 72 from a clock 16. See FIG. 3, col. 8, lines 31-46, col. 8, and line 66-col. 9, line 15. The read clock pulses and the desired minimum rotational speed are converted to voltages, which are fed to a differential amplifier 83 for generating a voltage signal indicative of the difference between the converted voltages. However, the CLV servo 8a does not receive via a line 74 pulses representing the actual rotational speed of the disc from a motor speed sensor 73.

Thus, during the CAV mode, the CAV servo 8b and the differential amplifier 88 may be interpreted as the speed servo means and the speed comparator, respectively. However, the CAV servo 8b is only used in the CAV mode, not in both the CAV and CLV modes. On the other hand, the CLV servo 8a and the differential amplifier 83 should not be interpreted as the servo means and the speed comparator, respectively, because, the CLV servo 8a does not receive actual rotational speed, as discussed above. As such, the differential amplifier 83 does not compare the actual rotation speed and the determined rotation speed, as recited in amended claim 5.

For the sake of argument, even if we interpret the motor servo and driver 8, and the differential amplifier 88 as the speed servo means and the speed comparator,

respectively, Kubo still does not yield amended claim 5 because the differential amplifier 88 is not used in both CAV and CLV modes as discussed above.

As discussed above, applicant disagrees that the motor servo and driver 8 (the combination of elements 8a, 8b, 89, 93, and 95) should be interpreted as the speed processing means. Applicant also disagrees that that the motor servo and driver 8 directly regulates the disc actuating means in response to the determined rotation speed value output from the motor servo and driver 8 (relied upon as the speed processing means) without comparing the determined rotation speed value to the actual rotation speed, and amended claim 5 can be arrived at by combining the servo 3 shown in FIG. 1 of the present application.

As discussed above, the motor servo and driver 8 (relied upon as the speed processing means) takes the determined rotation speed value as an input via the line 71 from the system controller 14. None of the elements 8a, 8b, 89, 93, and 95 produces the determined rotation speed value as an output, as alleged.

Furthermore, the CAV servo 8b is similar to the servo 3 shown in FIG. 1 of the present application because both compare a desired rotational speed with an actual rotational speed to regulate a disc actuating means. As such, combining these two teachings still does not arrive at a disc control device including a speed processing means for computing a determined rotation speed value depending on a location of the rotating disc in the CLV mode, and speed servo means including a speed comparator used in both CAV and CLV modes for receiving and comparing the rotation speed frequency signal and the determined rotation speed valued and for

regulating the disc actuating means in response to the determined speed value, as recited in amended claim 5.

Lastly, amended claim 5 recites that the speed processing means computes the determined rotational speed value for the first mode depending on a location of the rotating disc at which the pick-up scans the data. By contrast, as discussed above, the motor servo and driver 8 (relied upon as the speed processing means) does not even compute a determined rotational speed value, let alone computing a determined rotational speed value depending on the location of the rotating disc. Even if we interpret the system controller 14 as the speed processing means, the system controller 14 in the CLV mode merely selects a desired minimum rotation speed (sent over to the motor servo and driver 8 via the line 71), which is one of the standard audio CD speed, and two, four, eight, and twelve times of the minimum rotation speed. See col. 9, lines 8-18. Nowhere does Kubo disclose or suggest that this selected minimum rotation speed dependent on the position of the disc, as recited in amended claim 5.

In light of the fact that Kubo and FIG. 1 of the present application, considered singly and in combination, do not disclose or suggest a disc speed control device including speed servo means including a speed comparator used in both first and second modes for receiving and comparing the rotation speed frequency signal and a determined rotation speed values and for regulating the disc actuating means in response to the determined rotation speed value, and speed processing means for computing a determined rotation speed value in the CLV mode depending on a location of the rotating disc at which the pick-up scans the data, as recited in amended

claim 5, applicant submits that amended claim 5, and dependent claims 2 and 6-11, are patentable over Kubo.

Since amended claim 12 is amended to recite similar features as amended claim 5, applicant submits that the arguments made above with respect to claim 5 are also applicable to amended claim 12, and that amended claim 12, and dependent claims 4, 13, 14, and 18, are patentable over Kubo.

CONCLUSION

In view of the foregoing remarks and amendments, the Applicant believes that he has overcome all of the Examiner's basis for rejection, and that this application therefore stands in condition for allowance. However, if the Examiner is of the opinion that such action cannot be taken, the Applicant requests that he contact his undersigned attorney in order to resolve any outstanding issues without the necessity of issuing another Office Action.

FEE

No fee is believed due. However, if a fee is due, please charge the fee to Deposit Account 07-0832.

Respectfully submitted,

By: Reitseng Lin
Reg. No. 42,804
Phone (609) 734-6813

Patent Operations
Thomson Licensing Inc.
P.O. Box 5312
Princeton, New Jersey 08543-5312
September 20, 2004

CERTIFICATE OF MAILING

I hereby certify that this amendment is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed to [Mail Stop Amendment], Commissioner for Patents, Alexandria, Virginia 22313-1450 on:

9-20-04 Karen Schlauch

Date